

AMENDMENTS

Amendments to the Claims:

The following listing of claims replaces all previous listings or versions thereof:

1-13. (Canceled).

14. (Currently amended) A purified human alpha subunit of an SCN1A sodium channel nucleic acid sequence comprising a nucleic acid sequence selected from the group consisting of:

- (a) the nucleic acid sequence of SEQ ID NO:1;
- (b) a full complement of (a);
- (c) a nucleic acid sequence encoding an alpha subunit of SCN1A selected from the group consisting of:
 - (i) the alpha subunit of SCN1A set forth in SEQ ID NO:3;
 - (ii) an alpha subunit of SCN1A as set forth in SEQ ID NO:3, comprising a mutation corresponding to amino acid position 188 which replaces an aspartic acid residue by a valine residue;
 - (iii) an alpha subunit of SCN1A as set forth in SEQ ID NO:3, comprising a mutation corresponding to amino acid position 1238 which replaces a glutamic acid residue by an aspartic acid residue;
 - (iv) an alpha subunit of SCN1A as set forth in SEQ ID NO:3, comprising a mutation corresponding to amino acid position 1773 which replaces a serine residue by a tyrosine residue; and
 - (v) an alpha subunit of SCN1A being at least 95% identical to the SCN1A alpha subunits in (ii)-(iv) and comprising one of the

mutations at amino acid position 188, 1238 or 1773~~SEQ ID NO:1,~~
~~wherein the nucleic acid encodes an alpha subunit of an SCN1A~~
~~sodium channel; and~~

- (d) a SCN1A nucleic acid fragment selected from the group consisting of:
- (vi) an amplified segment comprising the nucleic acid sequence from nucleotide 739 to 867 of SEQ ID NO:1,
 - (vii) an amplified segment comprising the nucleic acid sequence from nucleotide 739 to 867 of SEQ ID NO:1 having a mutation at nucleotide 828,
 - (viii) an amplified segment comprising the nucleic acid sequence from nucleotide 3970 to 4143 of SEQ ID NO:1,
 - (ix~~v~~) an amplified segment comprising the nucleic acid sequence from nucleotide 3970 to 4143 of SEQ ID NO:1 having a mutation at position 3978,
 - (x~~v~~) an amplified segment comprising the nucleic acid sequence from nucleotide 5521 to 5747 of SEQ ID NO:1, and
 - (~~v~~xi) an amplified segment comprising the nucleic acid sequence from nucleotide 5521 to 5747 of SEQ ID NO:1 having a mutation at position 5582.

15.-16. (Canceled)

17. (Previously presented) A vector comprising any one of the sequences of claim 14.

18.-19. (Canceled)

20. (Previously presented) An isolated cell harboring a vector of claim 17.

21.-22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Currently amended) The ~~purified nucleic acid method~~ of claim ~~14~~[[24]], wherein said ~~variant~~ alpha subunit SCN1A nucleic acid ~~comprises~~encodes:

- (a) ~~a mutation at position 828 of SEQ ID NO: 1~~an alpha subunit of SCN1A as set forth in SEQ ID NO:3, comprising a mutation corresponding to amino acid position 188 which replaces an aspartic acid residue by a valine residue; or
- (b) ~~a GCATTTGACGATATA nucleotide sequence~~an alpha subunit of SCN1A at least 95% identical to the SCN1A alpha subunits in (a) and comprising said mutation at amino acid position 188; ~~or~~
- (c) ~~an ATCATATACTTCCTG nucleotide sequence .~~

26.-29. (Canceled)

30. (Previously presented) The purified nucleic acid of claim 14, wherein said SCN1A nucleic acid fragment in (d) comprises a GCATTTGACGATATA or an ATCATATACTTCCTG nucleotide sequence.

31. (Currently amended) The purified nucleic acid of claim ~~14~~[[23]], encoding the alpha subunit of SCN1A set forth in SEQ ID NO:3.

32. (Currently amended) The purified nucleic acid of claim ~~[[23]]14~~, encoding the alpha subunit of SCN1A set forth in SEQ ID NO:3, wherein aspartic acid residue at position 188 is replaced by a valine residue.

33. (Currently amended) The purified nucleic acid of claim ~~[[23]]14~~, encoding the alpha subunit of SCN1A set forth in SEQ ID NO:3, wherein glutamic acid residue at position 1238 is replaced by an aspartic acid residue.

34. (Currently amended) The purified nucleic acid of claim ~~[[23]]~~14, encoding the alpha subunit of SCN1A set forth in SEQ ID NO:3, wherein serine residue at position 1773 is replaced by a tyrosine residue.

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (New) A vector comprising the sequences of claim 25.

40. (New) An isolated cell harboring the vector of claim 39.